

*This section on Corporate Context that is included for the first time in the Department's budget is provided to facilitate the integration of the FY 2003 budget and performance measures. The Department's Strategic Plan published in September 2000 is no longer relevant since it does not reflect the priorities laid out in President Bush's Management Agenda, the 2001 National Energy Policy, OMB's R&D project investment criteria or the new policies that will be developed to address ever evolving and challenging terrorism threat. The Department has initiated the development of a new Strategic Plan due for publication in September 2002, however that process is just beginning. To maintain continuity of our approach that links program strategic performance goals and annual targets to higher level Departmental goals and Strategic Objectives, the Department has developed a revised set of Strategic Objectives in the structure of the September 2000 Strategic Plan.*

## **Science Corporate Context**

For the past 50 years, U.S. taxpayers have earned an enormous return on their investment in the basic research sponsored by the Department of Energy's Office of Science. The science underlying a multitude of discoveries – ranging from advanced energy and environmental technologies that reduce consumer electricity bills while protecting the environment, to great leaps in our knowledge of how the universe originated – has flowed out of the national laboratories and universities where DOE-sponsored scientists conduct their research. During Fiscal Year 2003, DOE will continue this legacy of discovery through strategic investments in basic research and the major national scientific user facilities that the Office of Science builds and operates on behalf of the Nation.

The events of 2001, particularly the war on terrorism, underscore the continuing need for sustained investments in basic research. DOE's accomplishment of its missions in national security, energy, and environment rely upon advances in basic research that are managed by the Office of Science. This basic research – which encompasses such diverse fields as materials sciences, chemistry, high energy and nuclear physics, plasma science, plant sciences, biology, advanced computation, and environmental studies – is contributing to effective counter measures in the war on terrorism, the Administration's goal of U.S. energy independence, and the overall vitality of the U.S. science and technology enterprise.

### **Science Goal**

Deliver the scientific knowledge and discoveries for DOE's applied missions; advance the frontiers of the physical sciences and areas of the biological, environmental and computational sciences; and provide world-class research facilities and essential scientific human capital to the Nation's overall science enterprise.

### **Strategic Objectives**

The Office of Science business line goal is supported by the following eight strategic objectives. Programs requesting funding to achieve these objectives are identified with each objective below:

- SC1:** Determine whether the Standard Model accurately predicts the mechanism that breaks the symmetry between natural forces and generates mass for all fundamental particles by 2010 or whether an alternate theory is required, and on the same timescale determine whether the absence of antimatter in the universe can be explained by known physics phenomena. (High Energy Physics)
- SC2:** By 2015, describe the properties of the nucleon and light nuclei in terms of the properties and interactions of the underlying quarks and gluons; by 2010, establish whether a quark-gluon plasma can be created in the laboratory and, if so, characterize its properties; by 2020, characterize the structure and reactions of nuclei at the limits of stability and develop the theoretical models to describe their properties, and characterize using experiments in the laboratory the nuclear processes within stars and supernovae that are needed to provide an understanding of nucleosynthesis. (Nuclear Physics)
- SC3:** By 2010, develop the basis for biotechnology solutions for clean energy, carbon sequestration, environmental cleanup, and bioterrorism detection and defeat by characterizing the multiprotein complexes that carry out biology in cells and by determining how microbial communities work as a system; and determine the sensitivity of climate to different levels of greenhouse gases and aerosols in the atmosphere and the potential resulting consequences of climate change associated with these levels by resolving or reducing key uncertainties in model predictions of both climate change that would result from each level and the associated consequences. (Biological and Environmental Research)
- SC4:** Provide leading scientific research programs in materials sciences and engineering, chemical sciences, biosciences, and geosciences that underpin DOE missions and spur major advances in national security, environmental quality, and the production of safe, secure, efficient, and environmentally responsible systems of energy supply; as part of these programs, by 2010, establish a suite of Nanoscale Science Research Centers and a robust nanoscience research program, allowing the atom-by-atom design of revolutionary new materials for DOE mission applications; and restore U.S. preeminence in neutron scattering research and facilities. (Basic Energy Sciences)
- SC5:** Enable advances and discoveries in DOE science through world-class research in the distributed operation of high performance, scientific computing and network facilities; and to deliver, in 2006, a suite of specialized software tools for DOE scientific simulations that take full advantage of terascale computers and high speed networks. (Advanced Scientific Computing Research)
- SC-6:** Advance the fundamental understanding of plasma, the fourth state of matter, and enhance predictive capabilities, through the comparison of well-diagnosed experiments, theory and simulation; for MFE, resolve outstanding scientific issues and establish reduced-cost paths to more attractive fusion energy systems by

investigating a broad range of innovative magnetic confinement configurations; advance understanding and innovation in high-performance plasmas, optimizing for projected power-plant requirements; develop enabling technologies to advance fusion science, pursue innovative technologies and materials to improve the vision for fusion energy; and apply systems analysis to optimize fusion development; for IFE, leveraging from the ICF program sponsored by the National Nuclear Security Agency's Office of Defense Programs, advance the fundamental understanding and predictability of high energy density plasmas for IFE. (Fusion Energy Sciences)

**SC7:** Provide major advanced scientific user facilities where scientific excellence is validated by external review; average operational downtime does not exceed 10% of schedule; construction and upgrades are within 10% of schedule and budget; and facility technology research and development programs meet their goals. (Crosscutting all major programs.)

**SC8:** Ensure efficient SC program management of research and construction projects through a re-engineering effort of SC processes by FY 2003 that will support world class science through systematic improvements in SC's laboratory physical infrastructure, security, and ES&H (Covers the following accounts: Energy Research Analyses, Science Laboratories Infrastructure, Science Program Direction, Science Education, Field Operations, Safeguards and Security, Technical Information)